

10/791,295  
PTGF-03109  
HIR.092

RECEIVED  
CENTRAL FAX CENTER

APR 20 2010

**AMENDMENTS TO THE CLAIMS:**

**Please cancel claim 58 without prejudice or disclaimer.**

**1- 45. (Canceled)**

**46. (Currently amended) A light-emitting apparatus, comprising:**

**a semiconductor light-emitting element that emits light with a predetermined wavelength; and**

**an external lens having a light convergence shape to converge light emitted from the semiconductor light-emitting element, said external lens comprising:**

**a recess to house the semiconductor light-emitting element; and**

**a phosphor layer portion that has a substantially uniform thickness and is conformally formed on a surface of the recess, the phosphor layer portion including a phosphor to be excited by irradiating light emitted from the semiconductor light-emitting element,**

**wherein a gap is formed between the phosphor layer portion and the semiconductor light-emitting element,**

**wherein the recess is closely disposed surrounding the light-emitting element such that the light convergence shape converges light radiated from the phosphor layer portion into a spot of light, and**

**wherein a size of the phosphor layer portion and the semiconductor light-emitting element is small compared to a size of the external lens such that the phosphor layer portion and the semiconductor light-emitting element are identifiable as a point light source.**

**47. (Currently amended) The light-emitting apparatus according to claim 46, wherein the semiconductor light-emitting element comprises a flip-chip type light-emitting diode (LED) element that emits light from its light emission surface located on a side of the light-emitting element which is the opposite side of the its mounting surface.**

10/791,295  
PTGF-03109  
HIR.092

48. (Previously presented) The light-emitting apparatus according to claim 46, wherein the recess is located close to the semiconductor light-emitting element along the profile of the semiconductor light-emitting element.
49. (Previously presented) The light-emitting apparatus according to claim 46, wherein the semiconductor light-emitting element comprises a plurality of light-emitting diode (LED) elements which are disposed in a predetermined arrangement.
50. (Previously presented) The light-emitting apparatus according to claim 46, wherein the semiconductor light-emitting element comprises a plurality of light-emitting diode (LED) elements which have different emission wavelengths and are disposed in a predetermined arrangement.
51. (Previously presented) The light-emitting apparatus according to claim 46, wherein the phosphor layer portion is formed on an entire surface of the recess.
52. (Canceled)
53. (Previously presented) The light-emitting apparatus according to claim 46, wherein a horizontal cross section of the recess comprises one of a circular shape and a rectangular shape.
54. (Previously presented) The light-emitting apparatus according to claim 46, further comprising:  
an electrode, said light-emitting element being formed on said electrode, and  
said external lens being affixed to said electrode by a sealant formed on said light-emitting element.
55. (Previously presented) The light-emitting apparatus according to claim 54, wherein said external lens comprises:

10/791,295  
PTGF-03109  
HIR.092

a convex portion and a bottom surface which is formed opposite the convex portion and includes said recess.

56. (Previously presented) The light-emitting apparatus according to claim 55, further comprising:

a submount formed on a concave portion of said electrode,  
a wiring pattern being formed on a surface of said submount and said light-emitting element being mounted on said wiring pattern.

57. (Previously presented) The light-emitting apparatus according to claim 56, wherein said electrode comprises a plurality of leads, and said submount is formed on said plurality of leads.

58. (Canceled).

59. (Currently amended) The light-emitting apparatus according to claim 46, wherein said semiconductor light-emitting element is mounted on an electrode and said external lens is mounted on said electrode, and

wherein the recess includes a rectangular-shaped horizontal cross-section and said upper surface comprises a planar surface which is formed opposite a light-emitting surface of said light-emitting element, such that the recess is closely disposed surrounding the light-emitting element and the light convergence shape converges light radiated from the phosphor layer portion into a spot of light.

60. (Previously presented) The light-emitting apparatus according to claim 59, wherein light emitted from said light-emitting surface is incident on said light convergence shape of said lens via said planar surface of said recess.

61. (Currently amended) A light-emitting apparatus, comprising:

an electrode formed on a surface of one of a lead and a wiring board;

10/791,295  
PTCF-03109  
HIR.092

a semiconductor light-emitting element that has a rectangular-shaped horizontal cross-section and is flip-chip mounted on said electrode and emits light with a predetermined wavelength; and

an injection-molded external lens comprising:

a planar surface which is mounted onto a planar surface of said electrode over said light-emitting element;

a light convergence shape formed on a side of said external lens which is opposite the planar surface, for converging light emitted from the light-emitting element;

a recess formed in said planar surface of said lens and forming an upper portion of a housing for the semiconductor light-emitting element, said planar surface of said electrode forming a lower portion of said housing; and

a phosphor layer portion that has a substantially uniform thickness and is conformally formed on a surface of the recess, the phosphor layer portion including a phosphor to be excited by irradiating light emitted from the semiconductor light-emitting element, a gap being formed between the phosphor layer portion and the semiconductor light-emitting element; and

~~a sealing resin formed in said gap recess between said light-emitting element and said phosphor layer portion~~, which seals said light-emitting element and bonds said external lens to said electrode,

wherein a size of the phosphor layer portion and the semiconductor light-emitting element is small compared to a size of the external lens such that the phosphor layer portion and the semiconductor light-emitting element are identifiable as a point light source.

62. (Currently amended) A light-emitting apparatus, comprising:

a semiconductor light-emitting element that emits light with a predetermined wavelength;

an external lens mounted over said semiconductor light-emitting element and having a light convergence shape to converge light emitted from the semiconductor

10/791,295  
PTGF-03109  
HIR.092

light-emitting element, a recess being formed in said external lens to house the semiconductor light-emitting element; and

a phosphor coating having a substantially uniform thickness and being conformally formed on a surface of the recess, said phosphor coating comprising a phosphor to be excited by irradiating light emitted from the semiconductor light-emitting element,

wherein a gap is formed between the phosphor coating and the semiconductor light-emitting element,

wherein the inner surface of said phosphor coating is closely disposed surrounding the light-emitting element such that the light convergence shape converges light radiated from the phosphor coating into a spot of light, and

wherein a size of the phosphor coating and the semiconductor light-emitting element is small compared to a size of the external lens such that the phosphor coating and the semiconductor light-emitting element are identifiable as a point light source.

63. (Previously presented) The light-emitting apparatus according to claim 62, wherein said external lens comprises an injection-molded lens.

64. (Previously presented) The light-emitting apparatus according to claim 63, further comprising:

a lead, said external lens being mounted on said lead,

wherein said external lens comprises a positioning member for positioning said external lens on said lead over said semiconductor light-emitting element.

65. (Previously presented) The light-emitting apparatus according to claim 64, wherein said positioning member comprises a convex portion which is engaged with a concave portion of said lead.

66. (New) The light-emitting apparatus according to claim 46, wherein the phosphor layer portion comprises a cylindrical-shaped surface, and an other surface which forms a

10/791,295  
PTGF-03109  
HIR.092

right angle with an end of the cylindrical-shaped surface.

67. (New) The light-emitting apparatus according to claim 66, wherein the gap is formed between the cylindrical-shaped surface and the semiconductor light-emitting element, and between the other surface and the semiconductor light-emitting element.

68. (New) The light-emitting apparatus according to claim 66, wherein the cylindrical-shaped surface of the phosphor layer portion comprises one of a circular cylindrical-shaped surface, a square cylindrical-shaped surface, and a rectangular cylindrical-shaped surface, and

wherein the other surface of the phosphor layer portion comprises one of a circular-shaped surface, a square-shaped surface, and a rectangular-shaped surface.

69. (New) The light-emitting apparatus according to claim 66, wherein the light-emitting element includes a first surface and a second surface which intersects the first surface at a right angle, and

wherein the right angle formed between the end of the cylindrical-shaped surface and the other surface of the phosphor layer portion is adjacent to the right angle formed between the first and second surface of the light-emitting element.

70. (New) The light-emitting apparatus according to claim 46, wherein the semiconductor light-emitting element is mounted on a mounting surface and the external lens is mounted on the mounting surface over the light emitting element, and

wherein the recess includes a first wall which is substantially perpendicular to the mounting surface and a second wall which intersects the first wall at a right angle and is substantially parallel to the mounting surface.